The Foot Soldiers

Graduate students are the unsung heroes of wildlife research.

story and photos by David Hart

Dana Morin bends down on the edge of a rocky trail, pulls on a pair of leather gloves, and picks up a twisted black cylinder about four inches long. It's animal scat, either a fox, bobcat, or possibly a coyote, says Morin. To be sure, she crumbles the dropping in her glove and brings it closer to her face, examining the shape, the composition, even the odor.

"Bobcat," she declares, explaining that bobcat scat has a unique smell and that the location—off to the side of the trail and partially covered with leaves—is also a good indication of what left the calling card.

Gross? Maybe. But for a graduate student conducting research, it's just part of the job. Morin, a Virginia Tech Ph.D. candidate, and fellow Tech grad student David Montage are in the early stages of a three-year study that will examine coyotes and their diet on the George Washington and Jefferson National Forest. She and Montage want to know just how many coyotes are in the study areas of Rockingham and Bath counties and if they are in any way to blame for the decline in deer numbers in the region. For much of the study period, she will be setting and checking traps, scouring the woods for more coyote scat, and following the movements of radio-collared coyotes across the national forest. They and a handful of undergraduate assistants will be living, eating, breathing, and thinking coyotes for the next three years.

"I love it. I can't imagine doing anything else," she says.

Cheap But Vital Labor

It's that passion that makes graduate students such an invaluable part of fish and wildlife research, says Cale Godfrey, who serves as a regional assistant director for the bureau of wildlife resources with the Department (DGIF). In fact, without their dedication, our knowledge of fish and wildlife would be just a fraction of what it currently is and our game regulations would likely be much different. Grad students, for example, played a major role in the Southern Appalachian Cooperative Grouse Research Project. It helped shape harvest and management recommendations for ruffed grouse in Virginia. A recent study conducted by a Tech student helped DGIF fisheries biologists learn more about the population dynamics of non-native snakeheads in the tidal Potomac River, and grad students examined striped bass mortality in Smith Mountain Lake. As a result of their findings, Department biologists altered stocking efforts to increase fingerling survival, creating a better fishery. Godfrey participated in the Cooperative Allegheny Bear Study in the early 1990s. His and other research helped shape the state's current bear management plan.

"Graduate students are willing to work long hours under some pretty rough conditions and for not much pay," says Godfrey. "They are extremely dedicated and they have an active and important role in shaping the way we manage our game and nongame fish and wildlife."

That low pay is one reason they are such an invaluable tool in our ongoing quest for knowledge of the natural world. Godfrey says it would be virtually impossible for Department staff biologists to conduct similar extensive research. Although some Department biologists do participate in studies, students tend to do much of the field work.

Left, examining animal scat is just part of the job for Ph.D. candidate Dana Morin. Right, grad student Jeff Dragon gladly walks through streams and muck in order to learn more about wood turtles.

Want To Be A Biologist?

If the life of a graduate student sounds like the perfect way to spend a few years, consider the advice of Virginia Tech fisheries professor Dr. Brian Murphy. He's been teaching at the university for 15 years and has seen thousands of students come through the wildlife and fisheries program. Some make it; most don't.

"The ones who succeed know what they want to do when they get here and they are determined to reach their goal," says Murphy.

It takes more than determination. Murphy says the best college students excel in math and biology (both vital subjects in the wildlife profession) in high school and rank high in their class.

"You'll have to do well in statistics and calculus in college, as well. There's no way around those courses," he adds.

Once you earn an undergraduate degree, you'll need at least a Master's to get a job as a biologist. The market is so competitive these days, an undergraduate degree likely won't take you very far in the wildlife business. However, Murphy says the job market is pretty good, thanks in part to the large number of biologists who are planning to retire over the next decade.

Dana Morin (R) is working a three-year coyote study in western Virginia. She will be assisted by Virginia Tech undergrads, including Josh Kinkead and Sarah Webber.

"We just couldn't afford to put a couple of staff biologists on a research project for two or three years at a time and still manage to do the jobs they are hired to do. Graduate students are cheap, but they are enthusiastic and they do good work," he says.

When he was a grad student at Tech, Godfrey got somewhere in the neighborhood of $1,100 a month during the three-year project. These days, the average amount is a little more, but it's still barely enough to cover basic living expenses. The money comes from various state, federal, or non-profit entities that want answers about a particular species.

In Jeff Dragon's case, the money is coming from a State Wildlife Grant from the U.S. Fish and Wildlife Service to the Department. His research project will shed more light on threatened wood turtles, a reclusive reptile that is facing some tough times. Dragon is examining the population status, breeding ecology, and habitat use in order to better understand ways to help the turtles survive. Like most grad students, he's doing his job on a shoestring budget.

"I eat lots of tuna fish and PB&J sandwiches, but I love it," admits Dragon.

He met Longwood University biology assistant professor Dr. Thomas Akre, a renowned turtle expert, who is working with the Department on this research in partnership with the Smithsonian Biology Conservation Institute.

"As soon as I heard about it, I knew I had to be a part of it," says Dragon.

Originally from rural New Jersey, he remembers moving box turtles out of the road and catching reptiles in the woods around his home as a boy.

"I was constantly aware that people were counting on us and what it would have meant if we didn't accomplish our goal. But research sometimes leads you in a direction you didn't anticipate. I learned that, even then, there is still much value in it.

–Cale Godfrey

"That's all I would do. I'd spend the summer looking for turtles and other reptiles and amphibians," he recalls.

It turned out to be vital training. Along with that hand-to-mouth existence, grad students often work long hours in the field for days on end. Morin spent the entire month of June working 12- to 15-hour days without a break. Later in the summer, Dragon expects to camp in the woods so he can be on site as the turtle eggs hatch at night or in the early morning. Morin also plans to spend much of her field time living like a gypsy in a tent somewhere on the national forest. It's just part of the life, a life that also includes animal bites, thunderstorms, mud, blood and sweat, swarms of biting insects, and the constant pressure of looming deadlines. Dragon can't count how many times he's been stung by wasps and other insects, and he developed a case of trenchfoot after spending day after day in wet boots. Despite the physical hardships, Godfrey says nothing compared to the constant mental pressure hanging over his head.

"There was a lot riding on the work we were doing and, as a student, I felt it would have been a very big deal if we messed up," he says. "I was constantly aware that people were counting on us and what it would have meant if we didn't accomplish our goal. But research sometimes leads you in a direction you didn't anticipate. I learned that, even then, there is still much value in it."

While the grueling field work and the physical hardships may actually sound appealing to some, the life of a grad student isn't all spent in the woods. The data gathered has to be entered into a computer and it has to be analyzed. After all, the underlying motive of their research is to unlock mysteries of the natural world and then present those findings to the science community and the general public. Godfrey spent a full six months plugging data into programs, determining what it all meant, and then writing it into a report. Then they face the scrutiny of their academic advisor, usually a professor who serves as both mentor and boss.

In some ways, says Morin, the hardships grad students endure as they conduct valuable research are a test to see if they have what it takes to cut it as a full-time researcher, professor, or biologist. Virginia Tech fisheries professor Dr. Brian Murphy agrees to some extent, but he says most students who apply for a graduate position understand what they may be getting themselves into. Successful candidates tend to have some sort of related experience, whether volunteering at a nature center or even working as a garbage collector at a state park, anything even slightly related to the outdoors. But even with some experience, not everyone is accepted.

Jeff Dragon holds the foundation of his research, a wood turtle. He will spend the next three years studying the life and habits of these threatened species. Below, fisheries biologists Vic DiCenzo and Dan Michaelson work trap nets on Sandy River Reservoir as part of their ongoing research.

"It's pretty competitive. We get around 200 applications each year for a limited number of graduate positions. We accept around 20 percent, depending on the funding available," says Murphy.

Dragon and Morin agree that their job isn't all blood, sweat, and tears. Along with becoming a renowned expert in their chosen field of study, graduate students sometimes have the opportunity to participate in field work in some exotic locations. Morin spent a year in Belize working on a howler monkey sanctuary. But even if she never had that opportunity, she would gladly repeat her years as a wildlife undergraduate and graduate student.

"It's a lot of hard work and some of the work can be pretty tedious and repetitive, but the good definitely outweighs the bad," she says, even if the bad involves examining animal scat. ❧

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